



#4  
Patent  
265/082

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wang et al.

Serial No.: 09/993,318

Filed: November 14, 2001

For: Method and Apparatus for Separation of  
Particles

)  
) Group Art Unit: 1743  
)  
) Examiner: Not Yet Assigned  
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INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

In accordance with 37 CFR §§ 1.97 and 1.98, the items identified in this Information Disclosure Statement ("IDS") are brought to the attention of the Office. The items are listed on the attached form PTO/SB/08A. Copies were previously provided in related application Serial No. 09/845,245, our Docket No. 263/168. Therefore, additional copies will be provided only if requested by the Examiner.

The items identified in this IDS may or may not be "material" pursuant to 37 CFR § 1.56. The submission thereof by Applicant is not to be construed as an admission that any such patent, publication or other information referred to therein is material or considered to be material (37 CFR § 1.97(h)), or even qualifies as "prior art" under 35 USC § 102 with respect to this invention unless specifically designated by Applicant as such.

This IDS is believed to be timely in that it is being submitted under 37 CFR § 1.97(b), that is (1) within three months of the filing date of the application, which is not a continued prosecution application

OC-101048.1

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(37 C.F.R. §1.8a)

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filed under § 1.53(d); or (2) within three months of entry of the national stage as set forth in 37 CFR § 1.491; or (3) before the mailing of a first Office action on the merits; or (4) before the mailing of a first Office action after filing a request for continued examination under § 1.114. Thus, no fee is required.

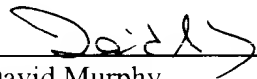
However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and charge the fee due under 37 CFR §1.17(p) to the deposit account referenced below.

The undersigned does not believe that any fees are due in connection with this submission. However, if the Commissioner deems otherwise, please charge any fees required to Deposit Account No. **12-2475**.

Respectfully submitted,  
LYON & LYON LLP

Dated: February 7, 2002

By: \_\_\_\_\_

  
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# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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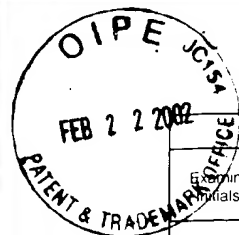
Sheet 1 of 8

## **Complete if Known**

Application Number	09/993,318
Filing Date	November 14, 2001
First Named Inventor	Mark M. Wang
Group Art Unit	1743
Examiner Name	Not Yet Assigned
Attorney Docket Number	265/082

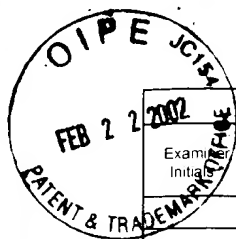
## **U.S. PATENT DOCUMENTS**

Examiner Initials *	Cite No. 1	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	AA	US 3558877	01/26/1971	Pressman	
	AB	US 3628182	12/14/1971	Ashkin et al	
	AC	US 3638139	01/25/1972	Ashkin et al	
	AD	US 3662183	05/09/1972	Askin et al	
	AE	US 3710279	01/09/1973	Ashkin	
	AF	US 3725810	04/03/1973	Ashkin et al	
	AG	US 3761721	09/25/1973	Altshuler et al	
	AH	US 3778612	12/11/1973	Ashkin	
	AI	US 3793541	02/19/1974	Ashkin et al	
	AJ	US 3808432	04/30/1974	Ashkin	
	AK	US 3808550	04/30/1974	Ashkin	
	AL	US 4063106	12/13/1977	Ashkin et al	
	AM	US 4092535	05/30/1978	Ashkin et al	
	AN	US 4127329	11/28/1978	Chang et al	
	AO	US 4247815	01/27/1981	Larson et al	
	AP	US 4327288	04/27/1982	Ashkin et al	
	AQ	US 4390403	06/28/1983	Batchelder	
	AR	US 4440638	04/03/1984	Judy et al	
	AS	US 4451412	05/29/1984	Loiseaux et al	
	AT	US 4453805	06/12/1984	Ashkin et al	
	AU	US 4520484	05/28/1985	Huignard et al	
	AV	US 4536657	08/20/1985	Bruel	
	AW	US 4627689	12/09/1986	Asher	
	AX	US 4632517	12/30/1986	Asher	
	AY	US 4827125	05/02/1989	Goldstein	
	AZ	US 4887721	12/19/1989	Martin et al	
	BA	US 4893886	01/16/1990	Ashkin	
	BB	US 4908112	03/13/1990	Pace	
	BC	US 5029791	07/09/1991	Ceccon et al	
	BD	US 5079169	01/07/1992	Chu et al	
	BE	US 5100627	03/31/1992	Buican et al	
	BF	US 5113286	05/12/1992	Morrison	
	BG	US 5121400	06/09/1992	Verdiell et al	
	BH	US 5170890	12/15/1992	Wilson et al	
	BI	US 5189294	02/23/1993	Jackson et al	
	BJ	US 5198369	03/30/1993	Itoh et al	
	BK	US 5206504	04/27/1993	Sridharan	
	BL	US 5212382	05/18/1993	Sasaki et al	
	BM	US 5245466	09/14/1993	Burns et al	
	BN	US 5274231	12/28/1993	Chu et al	
	BO	US 5283417	02/01/1994	Misawa et al	
	BP	US 5308976	05/03/1994	Misawa et al	



## U.S. PATENT DOCUMENTS

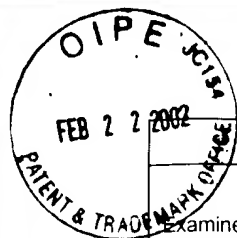
Examiner Initials *	Cite No. 1	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	BQ	US 5327515	07/05/1994	Anderson et al	
	BR	US 5337324	08/09/1994	Ohtsu et al	
	BS	US 5338930	08/16/1994	Chu et al	
	BT	US 5343038	08/30/1994	Nishiwaki et al	
	BU	US 5355252	10/11/1994	Haraguchi	
	BV	US 5360764	11/01/1994	Celotta et al	
	BW	US 5363190	11/08/1994	Inaba et al	
	BX	US 5364744	11/15/1994	Buican et al	
	BY	US 5374566	12/20/1994	Iranmanesh	
	BZ	US 5445011	08/29/1995	Ghislain et al	
	CA	US 5452123	09/19/1995	Asher et al	
	CB	US 5473471	12/05/1995	Yamagata et al	
	CC	US 5495105	02/27/1996	Nishimura et al	
	CD	US 5512745	04/30/1996	Finer et al	
	CE	US 5608519	03/04/1997	Gourley et al	
	CF	US 5620857	04/15/1997	Weetall et al	
	CG	US 5625484	04/29/1997	Coutsomitras	
	CH	US 5629802	05/13/1997	Clark	
	CI	US 5631141	05/20/1997	Sonek et al	
	CJ	US 5637458	06/10/1997	Frankel et al	
	CK	US 5644588	07/01/1997	Misawa	
	CL	US 5653859	08/05/1997	Parton et al	
	CM	US 5659561	08/19/1997	Torruellas et al	
	CN	US 5689109	11/18/1997	Schutze	
	CO	US 5694216	12/02/1997	Riza	
	CP	US 5760395	06/02/1998	Johnstone	
	CQ	US 5770856	06/23/1998	Fillardes et al	
	CR	US 5776674	07/07/1998	Ulmer	
	CS	US 5793485	08/11/1998	Gourley	
	CT	US 5795457	08/18/1998	Pethig et al	
	CT1	US5804436	09/08/1998	Okun et al	
	CU	US 5814200	09/29/1998	Pethig et al	
	CV	US 5858192	01/12/1999	Becker et al	
	CW	US 5888370	03/30/1999	Becker et al	
	CX	US 5900160	05/04/1999	Whitesides et al	
	CX1	US5919646	07/06/1999	Okun et al	
	CY	US 5935507	08/10/1999	Morito et al	
	CZ	US 5939716	08/17/1999	Neal	
	DA	US 5952651	09/14/1999	Morito et al	
	DB	US 5953166	09/14/1999	Shikano et al	
	DC	US 5956106	09/21/1999	Petersen et al	
	DD	US 5993630	11/30/1999	Becker et al	
	DE	US 5993631	11/30/1999	Parton et al	
	DF	US 5993632	11/30/1999	Becker et al	
	DG	US 6015714	01/18/2000	Baldarelli et al	
	DH	US 6033546	03/07/2000	Ramsey	
	DI	US 6055106	04/25/2000	Grier et al	
	DJ	US 6067859	05/30/2000	Kas et al	
	DK	US 6071394	06/06/2000	Cheng et al	
	DL	US 6078681	06/20/2000	Silver	
	DM	US 6082205	07/04/2000	Zborowski et al	
	DN	US 6088097	07/11/2000	Uhl	
	DO	US 6088376	07/11/2000	O'Brien et al	



U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	DO1	US6096509	08/01/2000	Okun et al	
	DP	US 6111398	08/29/2000	Graham	
	DQ	US 6121603	09/19/2000	Hang et al	
	DR	US 6139831	10/31/2000	Shivashankar et al	
	DS	US 6142025	11/07/2000	Zborowski et al	
	DT	US 6143558	11/07/2000	Kopelman et al	
	DU	US 6197176	03/06/2001	Pethig et al	
	DV	US 6208815	03/27/2001	Seidel et al	
	DW	US 6215134	04/10/2001	O'Brien et al	
	DX	US 6287776	09/11/2001	Hefti	
	DY	US 6287832	09/11/2001	Becker et al	
	DZ	US 6287874	09/11/2001	Hefti	
	EA	US 6294063	09/25/2001	Becker et al	

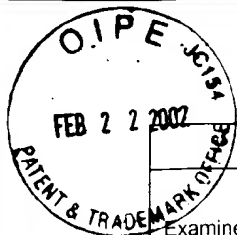
FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)				
	EB	WO 94/08221	04/14/1994	Warburton		
	EC	WO 97/21832	06/19/1997	Eigen et al		
	ED	WO 99/39190	08/05/1999	Hefti		
	EE	WO 99/61888	12/02/1999	Quake et al		
	EF	WO 00/23825	04/27/2000	Renn et al		
	EG	WO 00/45160	08/03/2000	Hefti		
	EH	WO 00/45170	08/03/2000	Hefti		
	EI	WO 00/45179	08/03/2000	Zuker et al		
	EJ	WO 00/54882	09/21/2000	Zhou et al		
	EK	WO 01/05514	01/25/2001	Lock et al		
	EL	WO 01/09606	02/08/2001	Hefti		
	EL1	WO 01/11333B1	09/27/2001	Ransom		
	EL2	WO 01/11333A3	02/15/2001	Becker		
	EM	WO 01/14870	03/01/2001	Becker et al		
	EN	WO 01/20329	03/22/2001	Hefti		
	EO	WO 01/32930	05/10/2001	Quake et al		
	EP	WO 01/40769	06/07/2001	Garbow		
	EQ	WO 01/44852	06/21/2001	Kirsch et al		
	ER	DE 4326181 A1	02/09/1995	Stelzer et al		
	ES	EP 0898493	01/19/2000	Pethig et al		
	ET	JP 3-101419	04/26/1991	Kudome et al		
	EU	JP 5-88107	04/09/1993	Ogasawara		
	EV	JP 5-232398	09/10/1993	Isaka		
	EW	JP 6-123886	05/06/1994	Higure et al		
	EX	JP 6-132000	05/13/1994	Haraguchi et al		
	EY	JP 8-234110	09/13/1996	Otaki et al		
	EZ	JP 10-48102	02/20/1998	Yasuda et al		
	FA	JP 10-62332	03/06/1998	Kano et al		
	FB	JP 11-218691	08/10/1999	Yasuda et al		

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
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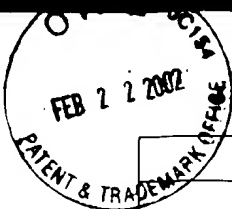
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	FC	ACKERSON et al, Radation Pressure As A Technique For Manipulating The Particle Order In Colloidal Suspensions, Faraday, Discuss.Chem.Soc., 83, 1987, pp 309-316	
	FD	AFZAL et al, Optical Tweezers Using A Diode Laser, Rev.Sci.Instrum., 63,4, 04/1992, pp 2157-2163	
	FE	AMATO, Optical Matter' Emerges Under Laser, Science News, 136, 1989, pp 212	
	FF	ASHER et al, Crystalline Colloidal Bragg Diffraction Devices: The Basis For A New Generation Of Raman Instrumentation, Spectroscopy, 1,12, 1986, pp. 26-31	
	FG	ASHKIN, Acceleration & Trapping Of Particles By Radiation Pressure, Physical Review Letters, 24,4, 01/26/1970, pp 156-159	
	FH	ASHKIN, Trapping Of Atoms By Resonance Radiation Pressure, Physical Review Letters, 40,12, 03/20/1978, pp 729-732	
	FI	ASHKIN, Applications Of Laser Radiation Pressure, Science, 210, 4474, 12/05/1980, pp 1081-1088	
	FJ	ASHKIN, Forces Of A Single Beam Gradient Laser Trap On A Dielectric Sphere In The Ray Optics Regime, Biophys. J., 61, 02/1992, pp 569-582	
	FK	ASHKIN et al, Optical Levitation Of Liquid Drops By Radiation Pressure, Science, 187, 4181, 03/21/1975, pp 1073-1075	
	FL	ASHKIN et al, Observation Of A Single Beam Gradient Force Optical Trap For Dielectric Particles, Optics Letters, 11,5, 05/1986, pp 288-290	
	FM	ASHKIN et al, Optical Trapping & Manipulation Of Viruses & Bacteria, Science, 235, 4795, 03/20/87, pp 1517-1520	
	FN	ASHKIN et al, Optical Trapping & Manipulation Of Single Cells Using Infrared Laser Beams, Nature, 330, 6150, 12/24-31/1987, pp 769-771	
	FO	ASHKIN, Internal Cell Manipulation Using Laser Traps, PNAS USA, 86, 20, 10/1989, pp 7914-7918	
	FP	ASHKIN, Optical Levitation By Radiation Pressure, Appl.Phys.Lett., 19,8, 10/15/1971, pp 283-285	
	FQ	ASHKIN, Optical Trapping & Manipulation Of Neutral Particles Using Lasers, PNAS USA, 94,10, 05/13/1997, pp 4853-4860	
	FR	AVIVA, Avia website printout, www.avivabio.com	
	FS	BAGNATO et al, Continuous Stopping & Trapping Of Neutral Atoms, Physical Review Letters, 58,21, 05/25/1987, pp 2194-2197	
	FT	BECKER et al, Separation Of Human Breast Cancer Cells From Blood By Differential Dielectric Affinity, PNAS USA, 92, 01/1995, pp 860-864	
	FU	BERNS et al, Use Of A Laser Induced Optical Force Trap To Study Chromosome Movement On The Mitotic Spindle, Proc.Natl.Acad.Sci.USA, 86,12, 06/1989, pp 4539-4543	
	FV	BERNS et al, Laser Microbeam As A Tool In Cell Biology, Intl Review of Cytology, 129, 1991, pp 1-44	
	FW	BIGELOW et al, Observation Of Channeling Of Atoms In The Three Dimensional Interference Pattern Of Optical Standing Waves, Physical Review Letters, 65,1, 07/02/1990, pp 29-32	
	FX	BLOCK et al, Compliance Of Bacterial Flagella Measuremnt Without Temperatures, Nature, 338, 04/05/1989, pp 514-518	
	FY	BLOCK, Optical Tweezers: A New Tool For Biophysics, Noninvasive Techniques In Cell Biology, chap 15, 1990, pp 375-402	
	FZ	BRONKHORST et al, A New Method To Study Shape Recovery Of Red Blood Cells Using Multiple Optical Trapping, Biophys. J., 69,5, 11/1995, pp 1666-1673	



## OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

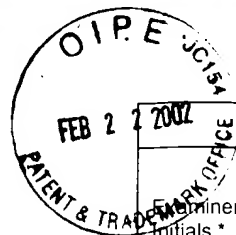
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	GA	BUICAN et al, Automated Single Cell Manipulation & Sorting By Light Trapping, Applied Optics, 26, 24, 12/15/1987, pp 5311-5316	
	GB	BURNS et al, Optical Binding, Physical Review Letters, 63,12, 09/18/1989, pp 1233-1236	
	GC	BURNS et al, Optical Matter: Crystallization & Binding In Intense Optical Fields, Science, 249, 4970, 08/17/1990, pp 749-754	
	GD	BUSINESS WEEK, Is There Anything A Laser Can't Do?, Business Week, 10/30/1989, pp 157	
	GE	BUSTAMANTE, Direct Observation & Manipulation Of Single DNA Molecules Using Fluorescence Microscopy, Annu.Rev.Biophys.Biophys.Chem., 20, 1991, pp 415-446	
	GF	BUSTAMANTE et al, Towards A Molecular Description Of Pulsed Field Gel Electrophoresis, TibTech, 11, 1993, pp 23-30	
	GG	BUSTAMANTE et al, Manipulation Of Single DNA Molecules & Measurement Of Their Persistence, Length & charge Density Under A Fluorescence Microscope, Abst of the 19th Ann Mtg Of Amer. Soc. For Photobiology, Photochem Photobiol, 53, 06/22/1991, pp 46S	
	GH	CHIOU et al, Interferometric Optical Tweezers, Optics Communications, 133, 01/01/1997, pp 7-10	
	GI	CHOU et al, A Microfabricated Device For Sizing & Sorting DNA Molecules, PNAs USA, 96, 01/1999, pp 11-13	
	GJ	CHOWDHURY et al, Laser Induced Freezing, Physical Review Letters, 55,8, 08/19/1985, pp 833-836	
	GK	CHOWDHURY et al, All Optical Logic Gates Using Colloids, Microwave & Optical Technology Letters, 1,5, 07/1988, pp 175-178	
	GL	CHOWDHURY et al, Exchange of Letters, Science, 252, 05/25/1991	
	GM	CHU et al, Experimental Observation Of Optically Trapped Atoms, Physical Review Letters, 57,3, 07/21/1986, pp 314-317	
	GN	CLARK et al, Single Colloidal Crystals, Nature, 281, 5726, 09/06/1979, pp 57-60	
	GO	CROCKER et al, Microscopic Measurement Of The Pair Interaction Potential Of Charge Stabilized Colloid, Physical Review Letters, 73,2, 07/11/1994, pp 352-355	
	GP	CROMIE, Scientists Bind Matter With Light, Harvard University Gazette, 10/13/1989, 1, pp 4-5	
	GQ	DUFRESNE et al, Optical Tweezer Arrays & Optical Substrates Created With Diffractive Optics, Review of Scientific Instruments, 69, 5, 05/1998, pp 1974-1977	
	GR	FALLMAN et al, Design For Fully Steerable Dual Trap Optical Tweezers, Applied Optics, 36,10, 04/01/1997, pp 2107-2113	
	GS	FISHER, The Light That Binds, Popular Science, 01/24/1990, pp 24-25	
	GT	FOURNIER et al, Writing Diffractive Structures By Optical Trapping, SPIE, 2406, 02/06-08/1995, pp 101-112	
	GU	FU et al, A Microfabricated Fluorescence Activated Cell Sorter, Nature Biotechnology, 17, 11/1999, pp 1109-1111	
	GV	GASCOYNE, Gascoyne website printout , 12/01/2000	
	GW	GORRE-TALINI et al, Sorting Of Brownian Particles By The Pulsed Application Of A Asymmetric Potential, Physical Review E, 56, 2, 08/00/1997, pp 2025-2034,	
	GX	GRIER, New Age Crystals, Nature, 389, 6653, 10/23/1997, pp 784-785	



## OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

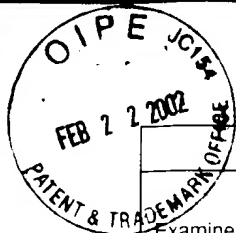
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	GY	GREULICH et al, The Light Microscope On Its Way From An Analytical To A Preparative Tool, Jnl Of Microscopy, 167, Pt 2, 08/01/1992, pp 127-151	
	GZ	GURRIERI et al, Imaging Of Kinked Configuratons Of DNA Molecules Undergoing Orthogonal Field Alternating Gel Electrophoresis By Fluorescence Microscopy, Biochemistry, 29, 13, 04/03/1990, pp 3396-3401	
	HA	GURRIERI et al, Trapping Of Megabase Sized DNA Molecules During Agarose Gel Electrophoresis, PNAs USA, 96, 01/1999, pp 453-458	
	HB	HOLTZ et al, Polymerized Colloidal Crystal Hydrogel Films As Intelligent Chemical Sensing Materials, Nature, 389, 10/23/1997, pp 829-832	
	HC	HOUSEAL et al, Imaging Of The Motions & Conformational Transitions Of Single DNA Molecules Using Fluorescence Microscopy, Biophys. J., 55, 324, 02/12/1989, pp 373a	
	HD	HOUSEAL et al, Real Time Imaging Of Single DNA Molecules With Fluorescence Microscopy, Biophys. J., 56, 09/1989, pp 507-516	
	HE	HUBER et al, Isolation Of A Hyperthermophilic Archaeum Predicted By in situ RNA Analysis, Nature, 376, 6535, 07/06/1995, pp 57-58	
	HF	INSIDE R&D, Matter Bound By Light, Inside R&D, 18, 43, 10/25/1989, pp 2	
	HG	KUO et al, Optical Tweezers In Cell Biology, Trends In Cell Biology, 2, 04/1992, pp 116-118	
	HH	LAI, Determination Of Spring Constant Of Laser Trapped Particle By Self-Mining Interferometry, Proc.of SPIE, 3921, 2000, pp 197-204	
	HI	LAW, Matter Rides On Ripples of Lights, New Scientist, 1691, 11/18/1989, pp 1691	
	HJ	LEGER et al, Coherent Laser Addition Using Binary Phase Gratings, Applied Optics, 26,20, 10/15/1987, pp 4391-4399	
	HK	MAMMEN et al, Optically Controlled Collisions Of Biological Objects To Evaluate Potent Polyvalent Inhibitors Of Virus-Cell Adhesion, Chemistry & Biology, 3, 9, 09/1996, pp 757-763	
	HL	MASON et al, Optical Measurements Of Frequency Dependent Linear Viscoelastic Moduli Of Complex Fluids, Physical Review Letters, 74,7, 02/13/1995, pp 1250-1253	
	HM	MCCLELLAND et al, Low Frequency Peculiarities Of The Photorefractive Response In Sillenites, Optics Communications, 113, 01/01/95, pp 371-377	
	HN	MISAWA et al, Spatial Pattern Formation, Size Selection, & Directional Flow Of Polymer Latex Particles By Laser Trapping Technique, Chemistry Letters, 3, 03/1991, pp 469-472	
	HO	MISAWA et al, Multibeam Laser Manipulation & Fixation Of Microparticles, Appl.Phys.Lett., 60,3, 01/20/1992, pp 310-312	
	HP	MITCHELL et al, A Practical Optical Trap For Manipulating & Isolating Bacteria From Complex Microbial Communities, Microb Ecol, 25, 2, 1993, pp 113-119	
	HQ	MURRAY et al, Experimental Observation Of Two Stage Melting In A Classical Two Dimensional Screened Coulomb System, Physical Review Letters, 58,12, 03/23/1987, pp 1200-1203	
	HR	MURRAY et al, Colloidal Crystals, American Scientist, 83,3, 05-06/1995, pp 238-245	
	HS	MYCOMETRIX, Mycometrix Website printout, <a href="http://www.mycometrix.com">http://www.mycometrix.com</a> , 12/01/2000	
	HT	NEW YORK TIMES, Atoms Bound Together By Light, New York Times, 10/31/1989, pp C17	
	HU	PATERSON et al, Controlled Rotation Of Optically Trapped Microscopic Particles, Science, 292, 05/04/2001, pp 912-914	
	HV	PRITCHARD et al, Light Traps Using Spontaneous Forces, Physical Review Letters, 57,3, 07/21/1986, pp 310-313	





## OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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	HW	QUAKE et al, From Micro- To Nanofabrication With Soft Materials, Science, 290, 11/24/2000, pp 1536-1540	
	HX	RAAB et al, Trapping Of Neutral Sodium Atoms With Radiation Pressure, Physical Review Letters, 59,23, 12/07/1987, pp 2631-2634	
	HY	ROGOVIN et al, Bifurcation In Degenerate Four-Wave Mixing In Liquid Suspensions Of Microspheres, Physical Review Letters, 54,20, 05/20/1985, pp 2222-2225	
	HZ	ROOSEN, A Theoretical & Experimental Study Of The Stable Equilibrium Positions Of Spheres Levitated By Two Horizontal Laser Beams, Optics Communications, 21, 1, 04/1977, pp 189-194	
	IA	SASAKI et al, Laser Scanning Micromanipulation & Spatial Patterning Of Fine Particles, Japn Jnl Of Applied Physics, 31,5B, 05/1991, pp L907-L909	
	IB	SASAKI et al, Pattern Formation & Flow Control Of Fine Particles By Laser Scanning Micromanipulation, Optics Letters, 16,19, 10/01/1991, pp 1463-1465	
	IC	SASAKI et al, Optical Micromanipulation Of A Lasing Polymer Particle In Water, Jpn.J.Appl.Phys., Pt2, 32, 8B, 08/15/1993, pp L1144-1147	
	ID	SMITH et al, Four-wave Mixing In An Artificial Kerr Medium, Optics Letters, 6, 6, 06/1981, pp 284-286	
	IE	SMITH et al, Direct Mechanical Measurements Of The Elasticity Of Single DNA Molecules By Using Magnetic Beads, Science, 258, 5085, 11/13/1992, pp 1122-1126	
	IF	SMITH et al, Model & Computer Simulations Of the Motion Of DNA Molecules During Pulse Field Gel Electrophoresis, Biochemistry, 30, 21, 05/28/1991, pp 5264-5274	
	IG	SUZUKI et al, Hysteretic Behavior & Irreversibility Of Polymer Gels By pH Change, J.Chem.Phys., 103, 11, 09/15/1995, pp 4706-4710	
	IH	SUZUKI et al, Optical Switching In Polymer Gels, J.Appl.Phys., 80,1, 07/01/1996, pp 131-136	
	II	SVOBODA et al, Biological Applications Of Optical Forces, Annu.Rev.Biophys.Biomol.Struct., 23, 1994, pp 247-285	
	IJ	SVOBODA et al, Conformation & Elasticity Of The Isolated Red Blood Cell Membrane Skeleton, Biophys.J., 63, 3, 09/01/1992, pp 784-793	
	IK	SWANSON et al, Diffractive Optical Elements For use In Infrared Systems, Optical Engineering, 28,6, 06/1989, pp 605-608	
	IL	TAKASHIMA et al, Dielectric Dispersion Of DNA, J.Mol.Biol., 7, 5, 11/1963, pp 455-467	
	IM	THIRUNAMACHANDRAN, Intramolecular Interactions In The Presence of An Intense Radiation Field, Molecular Physics, 40,2, 1980, pp 393-399	
	IN	UNGER et al, Monolithic Microfabricated Valves & Pumps By Multilayer Soft Lithography, Science, 288, 04/07/2000, pp 113-116	
	IO	VAN BLAADEREN et al, Template Directed Colloidal Crystallization, Nature, 385, 6614, 01/23/1997, pp 321-324	
	IP	VISSCHER et al, Construction Of Multiple Beam Optical Traps With Nanometer Resolution Position Screening, IEEE Jnl Of Selected Topics In Quantum Electronics, 2,4, 12/1996, pp 1066-1075	
	IQ	WEBER et al, Manipulation Of Cells, Organelles & Genomes By Laser Microbeam & Optical Trap, Intl Rev Of Cytology, 133, 1992, pp 1-41	
	IR	WESTBROOK et al, Localization Of Atoms In A Three Dimensional Standing Wave, Physical Review Letters, 65,1, 07/02/1990, pp 33-36	
	IS	WHEELER, Force Fields Of Laser Light Bind Molecules in A Remarkable Discovery At Harvard, The Chronicle Of Higher Education, 10/25/1989, pp A4	
	IT	WRIGHT et al, Radiation Trapping Forces On Microspheres With Optical Tweezers, Appl.Phys.Lett., 63, 6, 08/09/1993, pp 715-717	



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	IU	WUITE et al, An Integrated Laser Trap/Flow Control Video Microscope For The Study Of Single Biomolecules, Biophysical Jnl, 79,2, 08/2000, pp 1155-1167	
	IV	XIANG et al, A Combinatorial Approach To Materials Discovery, Science, 268, 5218, 06/23/1995, pp 1738-1740	
	IW	YABLONOVITCH et al, Inhibited Spontaneous Emission In Solid State Physics & Electronics, Physical Review Letters, 58,20, 05/18/1987, pp 2059-2062	
	IX	YABLONOVITCH et al, Photonic Band Structure: The Face Centered Cubic Face, Physical Review Letters, 63,18, 10/30/1989, pp 1950-1953	
	IY	YUQIU, Mechanical, Electrical, & Chemical Manipulation Of Single DNA Molecules, Nanotechnology, 3, 1992, pp 16-20	

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